Examine the spatial distribution of barrier-free facilities in community halls or centers across Hong Kong and assess their accessibility

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Abstract

In the realm of contemporary urban planning, the fair and just provision of facilities that are accessible to all individuals without barriers in community halls or centers is of utmost importance for the promotion and development of inclusive and easily accessible environments. The main focus of this research project is to closely examine and analyze the geographical distribution of these barrier-free facilities throughout the region of Hong Kong, and subsequently evaluate their level of accessibility. By utilizing the advanced and powerful tools of Geographic Information Systems (GIS) for conducting spatial analysis, the primary objective of this study is to offer valuable insights and knowledge to urban planners and policymakers. This research project specifically aims to identify and highlight key locations, thoroughly assess the distribution of amenities, and establish correlations between accessibility and population density, ultimately contributing to a comprehensive and all-encompassing understanding of the principles and practices of inclusive urban planning in Hong Kong.

Keywords: Accessibility, Barrier-Free Facilities, Community Halls, Spatial Distribution, Urban Planning, Geographic Information Systems (GIS), Inclusivity, Population Density, Hong Kong, Urban Infrastructure, Community Centers, Spatial Analysis, and Demographic Patterns.

1 Introduction

In the realm of contemporary urban planning, the fair distribution of facilities that are devoid of barriers in community halls or centers plays a fundamental role in the promotion of environments that are accessible and all-encompassing. Hong Kong, a bustling and dynamic city, grapples with ensuring that such facilities are strategically situated to cater to the diverse needs of its population. The objective of this research is to analyze the spatial arrangement of barrier-free facilities within community halls or centers across Hong Kong and evaluate their accessibility. By utilizing Geographic Information Systems (GIS) for spatial analysis, this study aims to provide valuable insights to urban planners, policymakers, and community stakeholders to improve the inclusivity and effectiveness of public spaces (Budds et al., 2005, Vacchelli and Peyrefitte, 2018, Fabula and Timár, 2018, Turok and Scheba, 2019, Musselwhite et al., 2015, Van Wee & Handy, 2016, Lucas et al., 2016, Anciaes & Jones, 2020; Lucas, 2012, World Health Organization, 2015).

2 Literature Review

The literature surrounding the distribution of barrier-free facilities underscores the importance of spatial analysis in promoting accessibility. Research by (R. Alsnih *et al.,2003*) has demonstrated that spatial inequities in the provision of accessibility features can disproportionately affect certain demographic groups. Furthermore, studies such as (J. Ryan *et al.,2015, Padeiro et al., 2019*) emphasize the pivotal role of GIS in assessing the spatial distribution of amenities, highlighting its efficacy in identifying areas with suboptimal accessibility. However, there remains a gap in the literature regarding the specific examination of barrier-free facilities within community halls or centers in the context of Hong Kong. This study addresses this gap by integrating GIS methodologies to comprehensively examine the spatial patterns of these facilities and their impact on overall accessibility.

3 Methodology

3.1 Data Collection

The key dataset for this study is a complete shapefile of barrier-free facilities in Hong Kong's community halls or centers. This information is supplemented by a polygon shapefile that represents Hong Kong's geographical boundaries. The inhabited places shapefile provides more context for community features (W.Y. Szeto *et al.,2017)*.

3.2 GIS Spatial Analysis

To study the distribution of barrier-free facilities, GIS software will be used, along with tools such as proximity analysis and spatial statistics. The geographical linkages between these amenities and numerous community qualities will be investigated, taking into account variables such as population density, demographic profiles, and existing infrastructure (A. Comber *et al.,2008)*.

3.3 Accessibility Assessment

The term accessibility measures will be created based on trip times and distances to barrier-free facilities, with GIS network analysis used. The analysis will take into account transit networks, ensuring that accessibility is accurately represented within Hong Kong's urban context (Jun Wang & Jun Lin Zhou,2022).

4 Results

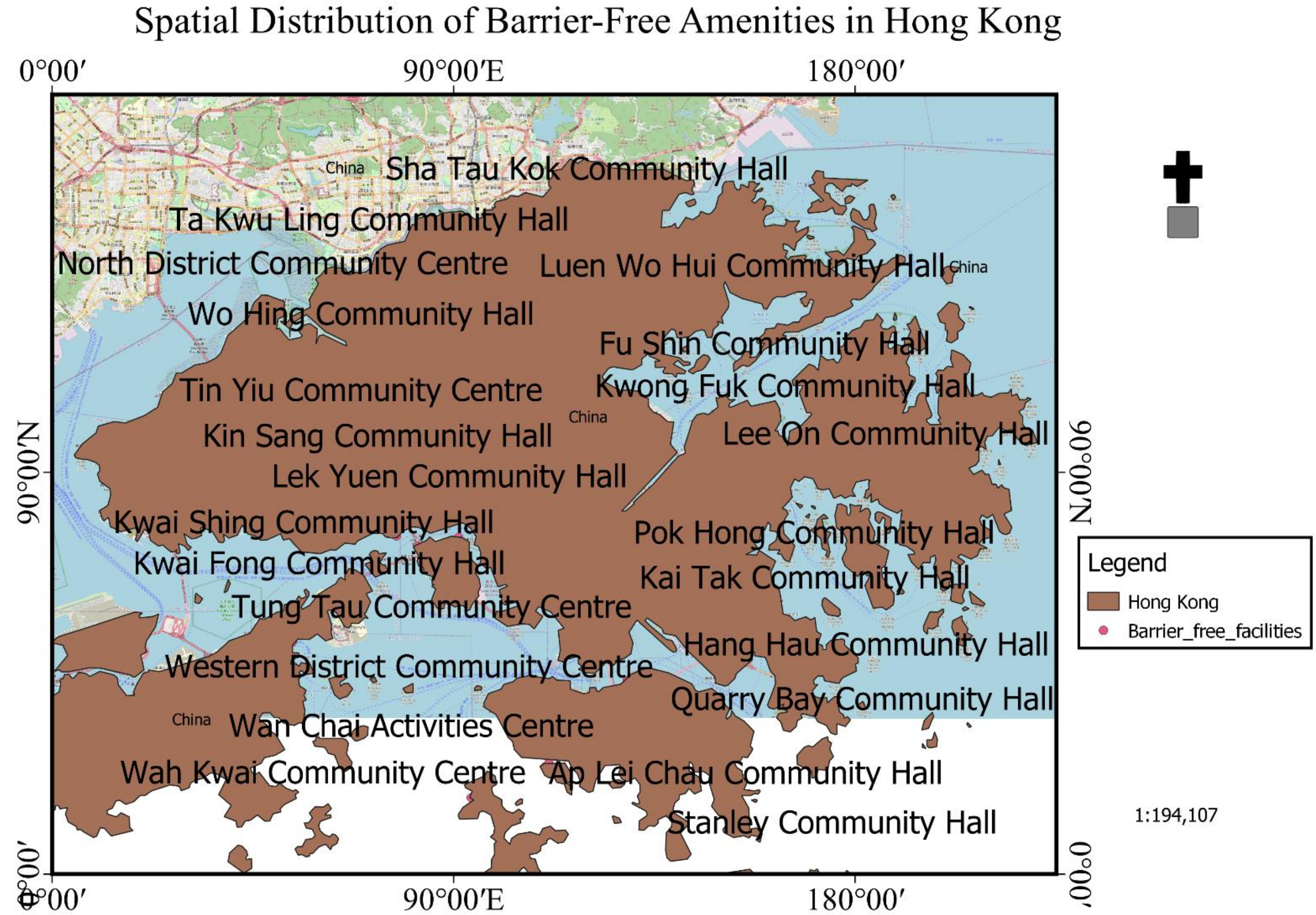

Figure1. Shows the spatial distribution of barrier-free facilities in Hong Kong.

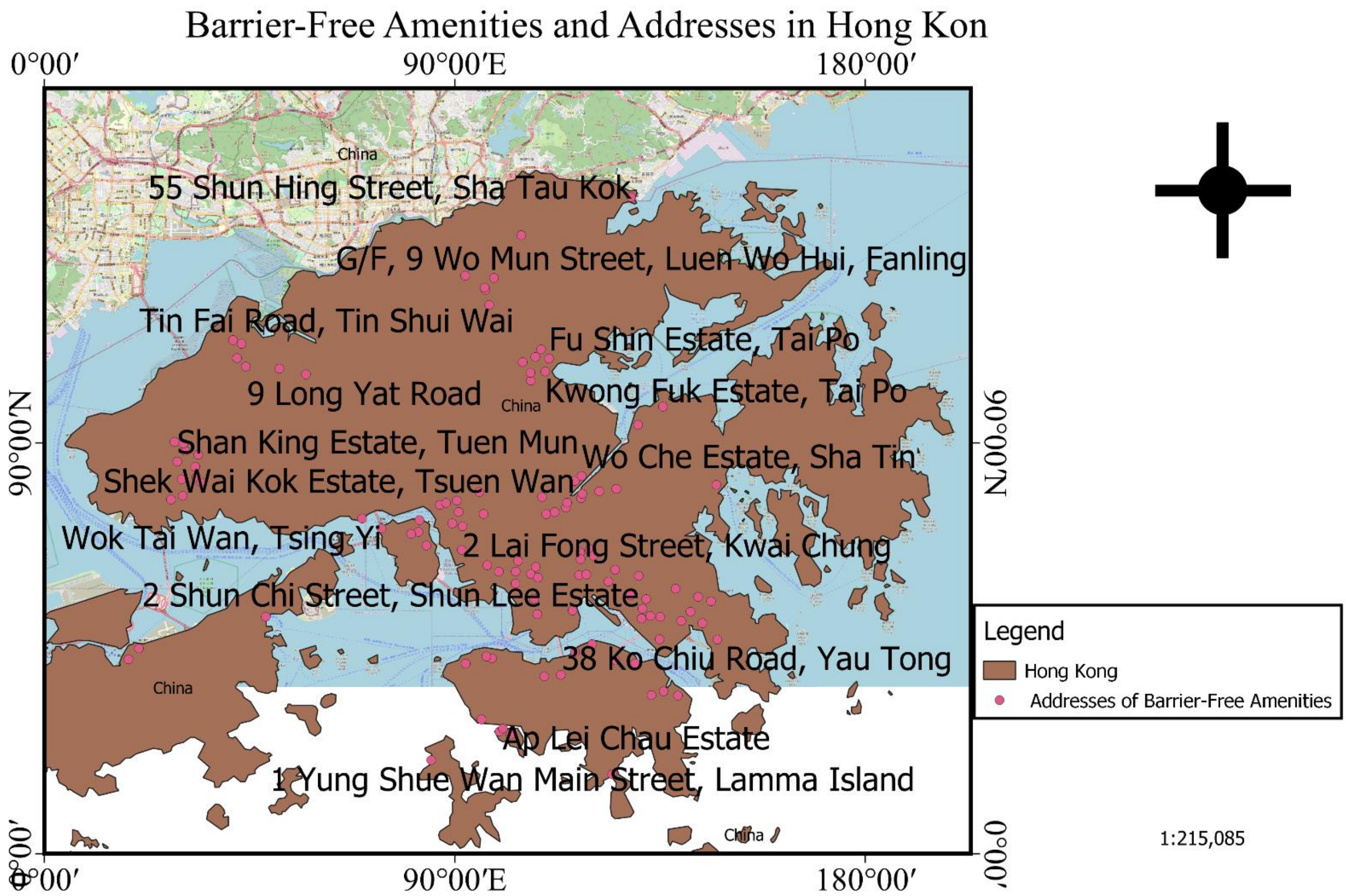
Barrier-Free Amenities and Addresses in Hong Kon
0°00′
90°00′E
180°00′
90°00′N
90°00′N
China
55 Shun Hing Street, Sha Tau Kok
G/F, 9 Wo Mun Street, Luen Wo Hui, Fanling
Tin Fai Road, Tin Shui Wai
Fu Shin Estate, Tai Po
9 Long Yat Road
China
Kwong Fuk Estate, Tai Po
Shan King Estate, Tuen Mun
Wo Che Estate, Sha Tin
Shek Wai Kok Estate, Tsuen Wan
Wok Tai Wan, Tsing Yi
2 Lai Fong Street, Kwai Chung
2 Shun Chi Street, Shun Lee Estate
38 Ko Chiu Road, Yau Tong
China
Ap Lei Chau Estate
1 Yung Shue Wan Main Street, Lamma Island
China
Legend
Hong Kong
Addresses of Barrier-Free Amenities
1:215,085
0°00′
90°00′E
180°00′

Figure 2. Shows the spatial distribution of barrier-free facilities and addresses in Hong Kong.

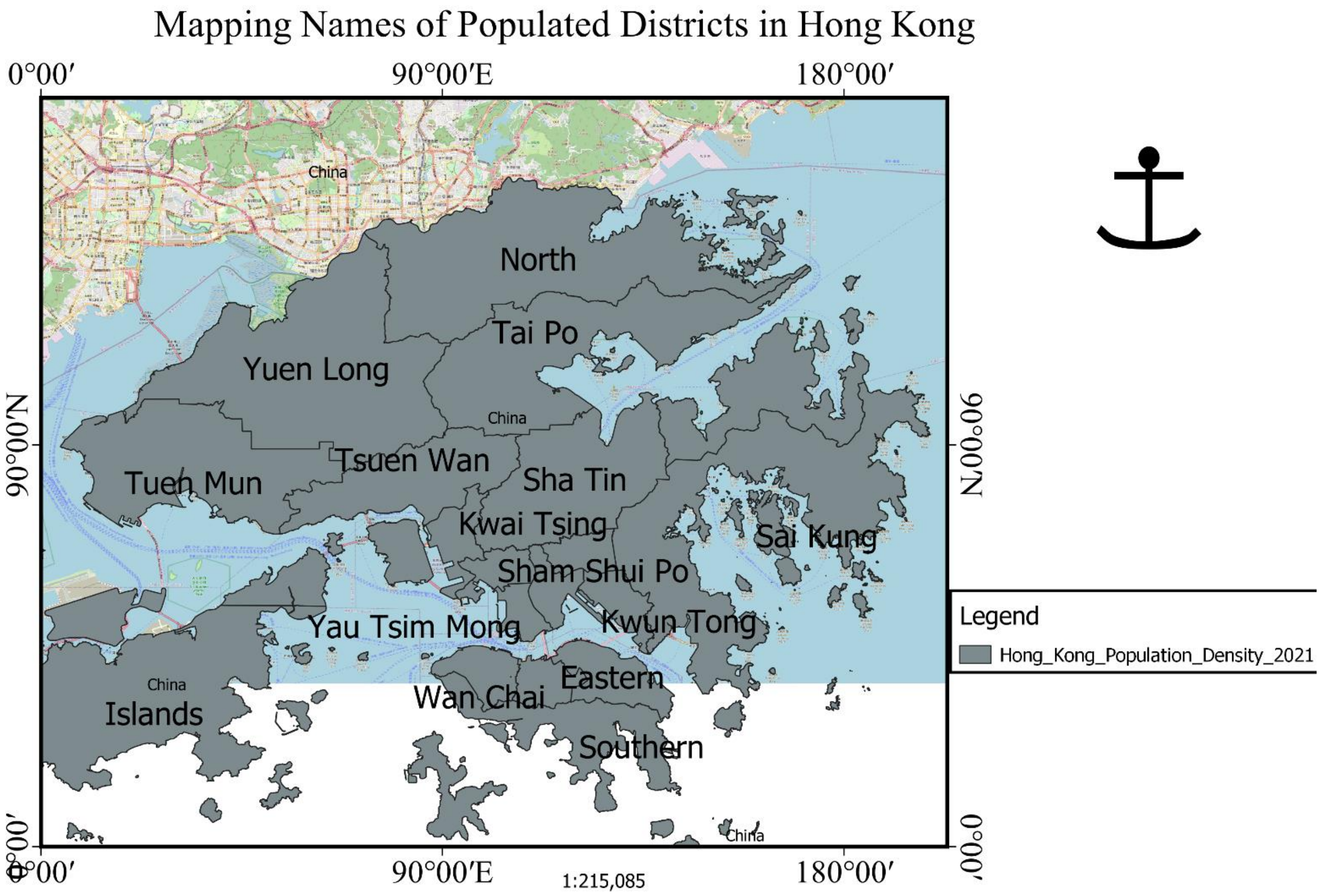

Figure 3. Shows the names of populated districts in Hong Kong.

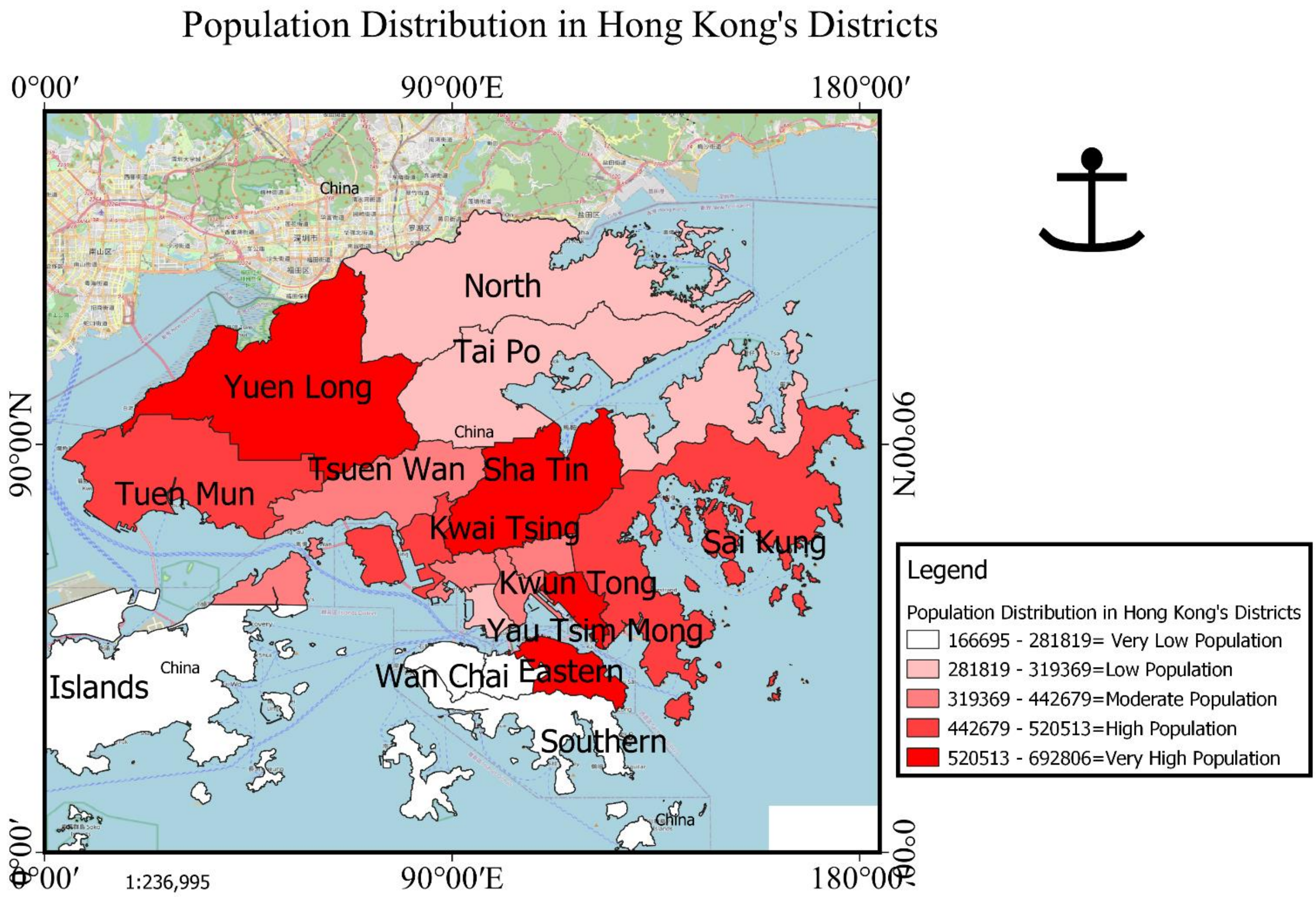
Population Distribution in Hong Kong's Districts
0°00′
90°00′E
180°00′
90°00′N
0°00′
1:236,995
China
North
Tai Po
Yuen Long
Tuen Mun
Tsuen Wan
Sha Tin
Kwai Tsing
Sai Kung
Kwun Tong
Yau Tsim Mong
Wan Chai
Eastern
Islands
Southern
Legend
Population Distribution in Hong Kong's Districts
166695 - 281819= Very Low Population
281819 - 319369=Low Population
319369 - 442679=Moderate Population
442679 - 520513=High Population
520513 - 692806=Very High Population

Figure 4. Shows the populated distribution of districts in Hong Kong.

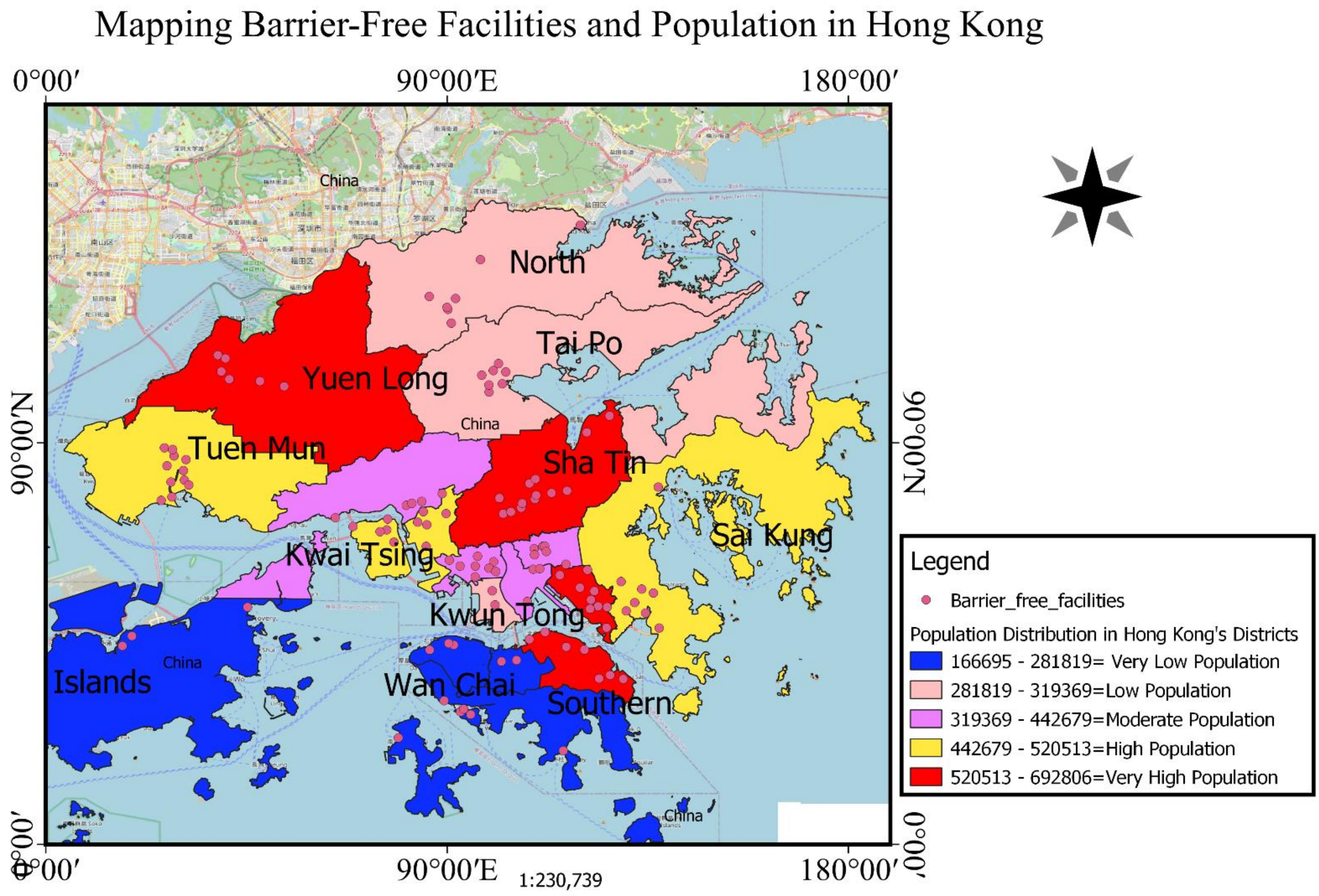
Mapping Barrier-Free Facilities and Population in Hong Kong
0°00′
90°00′E
180°00′
90°00′N
0°00′
China
North
Tai Po
Yuen Long
China
Tuen Mun
Sha Tin
Sai Kung
Kwai Tsing
Kwun Tong
Islands
China
Wan Chai
Southern
China
1:230,739
Legend
● Barrier_free_facilities
Population Distribution in Hong Kong's Districts
166695 - 281819= Very Low Population
281819 - 319369=Low Population
319369 - 442679=Moderate Population
442679 - 520513=High Population
520513 - 692806=Very High Population

Figure 5 shows the distribution of barrier-free facilities and districts in Hong Kong.

5 Discussion:

The distribution of amenities that are accessible to everyone in Hong Kong, as represented in Figure 1, reveals a diverse landscape of inclusive facilities throughout the region. Prominent locations such as Stanley Community Hall, Wah Kwai Community Center, and Western District Community Center highlight the commitment to accessibility in various districts. Importantly, the presence of barrier-free amenities is particularly noticeable in Yuen Long and Sha Tin, as emphasized in Figure 5, suggesting a deliberate focus on these areas to enhance inclusiveness. This concentration aligns with the identified districts of high population density, thereby emphasizing the link between accessibility initiatives and demographic considerations. Figure 2 offers a more detailed perspective by including the addresses of barrier-free amenities such as 38 Kochiu Road in Yau Tong and Tin Fai Road in Tin Shui Wai. This comprehensive mapping contributes to a holistic understanding of the geographical placement of these facilities. The provision of valuable insights for both urban planning and initiatives aimed at enhancing accessibility is apparent. The commitment to promoting accessibility across the diverse communities of Hong Kong is underscored by the dispersion of addresses across various districts, including Fanling, Lamma Island, and others.

The regional diversity of Hong Kong is illustrated by the populated places depicted in Figure 3, which encompass districts in the North, South, Central, Eastern, and Western parts of the region. This geographical distribution plays a crucial role in evaluating the fair allocation of barrier-free amenities. While Yuen Long, Tsuen Wan, and Sha Tin are situated in the Northern and Central regions, Figure 4 highlights the need for strategic accessibility planning in densely populated districts like Tseung Kwan O and Sai Kung.The population distribution in Figure 4 demonstrates the link between population density and accessibility considerations. Districts with a high population density, such as Yuen Long, Sha Tin, and Kwai Tsing, are also home to a greater concentration of barrier-free amenities. The highlighted high-population neighbourhoods, such as Eastern and Yau Tsim Mong, indicate prospective sites for targeted accessibility improvements (XUE Y X. & LING S Y. ,2020).

6 Conclusion:

To summarize, the findings of this study project shed light on the complex relationship between the spatial distribution of barrier-free services, population density, and geographic variety in Hong Kong. The concentration of these amenities in specific districts, particularly Yuen Long and Sha Tin, demonstrates the planned use of resources to improve access in heavily populated areas. The inclusion of addresses in Figure 2 gives useful information for urban planning, enabling focused actions to meet specific neighbourhood needs. The highlighted neighbourhoods with high and very high population density serve as critical focal points for future accessibility improvements, highlighting the need of customizing activities to demographic patterns. Overall, this study provides a thorough perspective that can aid policymakers, urban planners, and community stakeholders in building inclusive settings across Hong Kong's different lands (Famakin, & Leung 2018, E. Boakye-Dankwa *et al,2019)*.

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